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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,264	01/05/2001	Tetsuo Usami	OKI.202	3022
20987	7590	11/16/2005		
VOLENTINE FRANCO, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			EXAMINER RAO, SHRINIVAS H	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/754,264

Applicant(s)

USAMI ET AL.

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 10-13, 17, 18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 10-13, 17-18 & 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### ***Response to Amendment***

Applicants' amendment filed on August 10, 2005 has been forwarded to the Examiner on September 01, 2005.

Therefore claim 14 as amended by the amendment and claims 10-13,17-18 and 20 as previously recited are currently pending in the Application.

Claims 1-9,15-16 and 19 have been cancelled.

It is noted for the record that the Examiner required clarification because pages 3-5 of the amendment filed on January 27, 2005 wherein claims 1-9 were indicated as pending and Applicants' reply the claims in previous amendment of July 26, 2004 listing of claims section, claims 1-9 were indicated as cancelled. It is not understood how the previous amendment relates to the amendment of January 27, 2005. If anything Applicants' different indication of the same claims as pending and cancelled in different sections of the same amendment or erroneous indication in succeeding amendments only confuse as to the status of which claims are cancelled and which are pending.

### ***Drawings***

Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC Section 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10 -15 , 17,18 and 20 are rejected under 35 U.S.C. 103(a) as being patentable over Wang ( U.S. Patent No. 5,604,155, herein after Wang) in view of Fukui Soichi ( Japanese Patent Publication No. 9-249966, herein after Soichi) both previously applied. For response to Applicants' arguments see section below.

With respect to claim 10, Wang describes a method of depositing a wiring film over a semiconductor substrate , the method comprising :

Wang does not specifically describe a Al Ti target

However Soichi in its table 2 , no. 2 describes using Al Ti target to improve the reliability of the membrane thin film ) formed that can be used in optical media devices.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Soichi's Al a Ti target in Wang's method to improve the

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reliability of the membrane thin film ) formed that can be used in optical media devices.

( Soichi Effect of the invention section and table 3).

The other limitations of claim 10 are :

providing a substrate (Wang col. 1 line 29 ), forming a Ti Layer over the substrate Wang fig. 2 # 52, col. 4 lines 3-7), sputter depositing an Al<sub>3</sub>Ti layer on said Ti layer using said Al<sub>3</sub>Ti target ( Soichi English -abstract) and after the sputter depositing, annealing said substrate at a temperature of at least 400 °C to promote absorption of Si into said Al<sub>3</sub>Ti layer. (Wang fig.3 # 108, col. 4 lines 25-26, col. 3 lines 5-6 ).

The newly added limitation of performing the annealing step after sputter deposition was previously recited in claim 14 and previously rejected for Wang does not teach/describe the step of " pattern etching an Al layer, which forms beneath said Al-Si-Cu layer and after depositing of the Al-Si-Cu layer, annealing the substrate at a temperature of at least 400 °C" is not persuasive because temperature of at least 400 °C Wang col. 2 lines 36-37 but not in the order presently recited in the claims. describe the annealing step at 450 °C

However, as stated before, it is well settled law that , " As a matter of fact selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. In re Burhaus, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) Further , " generally , Applicants' reversed order of process sequence as compared to Wang's , can not be considered as a an act of invention, since reversing the order of prior art process step is held to render prima facie obvious. Ex parte Rubin, 126 USPQ 440 ( BAPI 1959).

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It is further noted that the specification contains no disclosure of either the critical nature of claimed sequence of process steps or any unexpected results therefrom. Where patentability is said to be based upon particular chosen sequence, the Applicant must show the chosen sequence of performing steps are critical.

With respect to claim 11, wherein an Al layer is deposited on said Al<sub>3</sub>Ti layer (Wang fig. 3, col. 4 lines 25-26).

With respect to claim 12, wherein the step of pattern-etching said Al layer thereby forming a wiring pattern. (Wang col. 2 lines 52-55).

With respect to claim 13, wherein the method further comprises forming an insulating layer between said substrate and said Al<sub>3</sub>Ti layer (Wang col. 1 lines 36-38).

With respect to claim 14, Wang describes a method of depositing a wiring film, the method comprising : Providing a substrate ( Wang col. 1 line 29 ) , forming a Ti Layer over the substrate Wang fig. 2 # 52, col. 4 lines 3-7), depositing an AlSiCu layer on said Ti layer which forms an Al<sub>3</sub>Ti layer on said Ti Layer ( Soichi English - abstract- the motivation to combine Wang and Soichi is given above ) and pattern etching an Al layer which forms beneath said AlSiCu layer annealing the substrate at a temperature of at least 400 C to form an Al<sub>3</sub>Ti layer on said Ti layer ( Wang fig. 3 step 14, Wang figure 2 step 108).

With respect to claim 15, Wang describes the method as recited in claim 14, wherein said AlSiCu layer is deposited at a temperature of at least 400 degrees C. (Wang fig.3 # 108, col. 4 lines 25-26, col. 3 lines 5-6 ).

With respect to claim 17 it repeats the steps of claim 10 and is rejected for

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reasons set out under claim 10 above.

With respect to claim 18, Wang teaches a method as recited in claim 17, wherein said AL layer is deposited at a temperature of at least 4000 C (Wang fig.3 # 108, col. 4 lines 25-26, col. 3 lines 5-6 ).

With respect to claim 20 Wang describes a method as recited in claim 17, herein said AlTi layer is deposited at a temperature of at least 4000 C. ( Wang col. 4 lines 21 to 40).

### ***Response to Arguments***

Applicant's arguments filed 09/01/2005 have been fully considered but they are not persuasive for the following reasons :

Applicants' first contention that the prior art relied upon by the examiner does not make the step of "sputter depositing an Al<sub>3</sub> Ti layer " because the applied primary reference Wang does not sputter deposit an Al<sub>3</sub> Ti layer, is not persuasive because the outstanding rejection has not been properly understood , the pertinent portion of the rejection is reproduced below.

sputter depositing an Al<sub>3</sub>Ti layer on said Ti layer using said Al<sub>3</sub>Ti target ( Soichi English -abstract).

Therefore the proper understanding of the rejection requires a realization that the rejection states that Wang is silent about the step of sputter depositing an Al<sub>3</sub>Ti layer but describes SPUTTER DEPOSITING Al/Cu /Si which reacts with the glue to form an Al<sub>3</sub>Ti layer ( Wang at least col. 4 lines 23-25 ,etc. and therefore a secondary reference Soichi is applied to expressly show that teaching.

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If as Applicants' desire If Wang were to specifically state the step of sputter depositing an Al<sub>3</sub>Ti layer then the outstanding rejection could have been a 102 anticipatory type rejection and not the outstanding 103 obviousness type rejection.

It is further noted that Applicants' by trying to distinguish what each of the references individually teach and allegedly not teach are engaging in impermissible piecemeal analysis of the applied references by trying to distinguish individual applied references ( Wang allegedly does not teach sputtering step but as shown above but describes SPUTTER DEPOSITING Al/Cu /Si which reacts with the glue to form an Al<sub>3</sub>Ti layer) whereas the rejection is based on the combined teachings of Wang and Soichi.

Applicants' next contention that is also based on incomplete understanding of the outstanding rejection .Applicants' allege that Wang and Soichi cannot be combined because " Wang specifically forms Al<sub>3</sub>Ti layer by reaction of Ti glue and thus does not need an additional sputter deposited Al<sub>3</sub>Ti layer" ( emphasis supplied) is not persuasive because Applicants' have not considered the process wherein the reactants that form the Al<sub>3</sub>Ti layer is/are sputter deposited and then the sputter deposited reactants form the Al<sub>3</sub>Ti layer only in the last step formed by reaction of glue ( as Applicants' want the teachings of Soichi to be limited to ) but a process by sputter deposition as taught by Soichi of the Al<sub>3</sub>Ti layer itself instead of the reactants being sputter deposited and a latter step that forms Al<sub>3</sub>Ti layer as taught by Wang thereby forming a single Al<sub>3</sub>Ti layer and not an additional sputter deposited Al<sub>3</sub>Ti layer as alleged by the Applicants.

Applicants' next contention that, " One of ordinary skill would not be motivated to apply a teaching from optical media devices ( or a liquid crystal TFT) such as optical



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discs as in the Soichi reference to modify MOSFET contact metallization process of the Wang reference " is not persuasive because contrary to Applicants' contention One of ordinary skill would be motivated to apply a teaching from optical media devices ( or a liquid crystal TFT) because it is well known that Mos devices are used in liquid crystal TFT displays and MOSFET is a type of MOS device.

Rest of Applicants' arguments that cited portions of the prior art do not teach stated recitations of the claim are not persuasive because the portions relied upon by the applicants' is taken out of context and if any additional portions of the prior art is required to clarify Applicants' misunderstanding the same has been provided to the extent possible above.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is ( 571)272-1718. The examiner can normally be reached on 8.00 to 5.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fahmy Wael can be reached on (571) 272-1714. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Steven H. Rao

Patent Examiner

November 09, 2005.



LONG PHAM  
PRIMARY EXAMINER